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Agricultural Memorandum No. 255

Butterfat Content of Milk in Late Summer

Ag. Mem No. 254 indicated that the winter levels of butterfat appeared to be largely dependent on June rainfall, suggesting that hay quality was important. This suggests that late summer levels should vary with grass availability.

It is difficult to obtain values of potential (or effective) transpiration for the country as a whole to match with the England and Wales rainfall and butterfat figures. As a first approach the Cheshire PT values for June, July and August were compared with the England and Wales rainfall for the same period.

It was found that

1. If the late summer was "dry", in that the PT exceeded the rainfall, the excess was highly correlated with the drop in butterfat from the 4th to the 3rd quarter (0.97).

2. If the late summer was "wet" the rainfall exceeding the potential transpiration then the drop had a high negative correlation with the potential transpiration (0.86).

Results. 1. Change in butterfat 4th to 3rd quarter = -0.189 - 0.0245D
where D = rainfall deficit below PT (in)
(valid when deficit was zero or more)

Year	June-July-August					
	Rain	P.T.	Deficit	Estimate	Actual	Error
1959	5.8	11.15	5.35	- 0.32	- 0.32	0.0
1960	10.7	10.65	0.0	- 0.19	- 0.18	- 0.01
1961	7.3	9.90	2.6	- 0.25	- 0.24	- 0.01
1962	7.4	9.20	1.8	- 0.23	- 0.23	0.0
1963	9.6	9.60	0.0	- 0.19	- 0.20	+ 0.01
1964	7.1	9.10	2.0	- 0.24	- 0.25	+ 0.01
1967	7.1	10.40	3.3	- 0.27	- 0.27	0.0

2. Change in butterfat 4th to 3rd quarter = - 0.666 + 0.047 P
where P = Potential Transpiration
(valid when no deficit existed)

Year	June-July-August				
	Rain	P.T.	Estimate	Actual	Error
1958	12.0	9.05	- 0.24	- 0.23	- 0.01
1960	10.7	10.65	- 0.17	- 0.18	+ 0.01
1963	9.6	9.60	- 0.21	- 0.20	- 0.01
1965	9.5	9.35	- 0.23	- 0.22	- 0.01
1966	10.2	9.25	- 0.23	- 0.25	+ 0.02

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These formulae are of limited use for prediction as they demand knowledge of rainfall and potential transpiration up to the end of August, and the 3rd quarter ends in September.

Any comments or criticism on this memorandum should be sent to the author.

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